

MARINE REVIEW.

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No. 9.

Lake Freight Situation.

It is as well as settled now that the Lake Superior output of ore this year will fall short of 6,000,000 gross tons, as compared to 9,003,701 gross tons shipped during 1890. Figures presented last week showed that the movement to August 1 this year was about 200,000 tons short of the three million mark, and shipments since August 1, excepting in the case of the Vermillion range, have been much lighter than was expected. During the week ending with the 19th inst. the movement from Ashland was little more than half that of the corresponding week a year ago. This is evidence of a disposition on the part of producers to bring down very little unsold ore on the prevailing rates of lake freight. The demand from furnace men for additional supplies has been very light since the spring sales and the increase over first prices has been but 25 to 35 cents a ton, with that in only a few cases. This restriction in the ore movement may cause a more quiet trade than has been expected during the past few weeks, but there is little doubt that heavy grain shipments will furnish remunerative rates. Duluth has been paying $3\frac{1}{4}$ cents on wheat to Buffalo for several days past and this has helped to steady ore freights, which are quoted at 90 cents from Escanaba, \$1.05 from Marquette and \$1.15 from Ashland.

Coal tonnage is wanted for both Lake Superior and Lake Michigan, the demand slightly exceeding the supply for several days past. A uniform rate of 50 cents is reported for Duluth, Superior, Marquette, Milwaukee and Chicago. There has been no shortage of cars on the roads carrying coal to Cleveland and other ports east of Cleveland on Lake Erie but some trouble from this source is reported in the Hocking valley. The coal is going forward, however, about as fast as it can be taken care of at upper lake ports.

First Screw Steamer on the Lake.

Vandalia was the name of the first screw steamer ever built on the lakes. The hull was built in Oswego and the machinery in Auburn (N. Y.) penitentiary. John Pheat of Cleveland was the engineer. The boilers were of the fire-box locomotive type. "I was engineer on the side-wheel steamer Cleveland at the time" said the veteran ex-Steamboat Inspector Thomas Fitzpatrick a few days ago "and I remember meeting the Vandalia going up the Detroit river as we were passing down. She was puffing like a locomotive. Two or three boats of the same kind were afterwards built at Oswego. Later on when propellers became more numerous, I remember discussing with a number of friends on the river front at Detroit the advisability of building a steamer for the lumber trade. We decided that the cost of running the steamer would eat up all the profit in such a trade. Those were primitive days in the lake business.

Canada's Merchant Marine.

The twenty-third annual report of Canada's department of marine, just issued, shows that the total number of vessels remaining on the register books of the Dominion on Dec. 31, 1890, including old and new vessels, sailing vessels, steamers and barges was 6,991, measuring 1,024,974 tons register tonnage, being a decrease of 162 vessels, and a decrease of 15,507 tons register as compared with 1889. The number of steamers on the registry books on the same date was 1,364, with a gross tonnage of 206,855 tons. Assuming the average value to be \$30 per ton, the value

of the registered tonnage of Canada, on Dec. 31, last would be \$30,749,220.

The number of new vessels built and registered in the Dominion of Canada during the last year was 285, measuring 52,378 tons register tonnage. Estimating the value of the new tonnage at \$45 per ton, it gives a total value of \$2,357,010 for new vessels.

In 1873 Canada had 6,783 vessels of 1,073,718 tons, and in all the years since that time the vessel property owned in the country has not at any time varied 300,000 tons.

The tonnage of the Dominion is divided among the different provinces as follows:

PROVINCES:	Number of vessels.	Number of steamers.	Gross tonnage steamers.	Total tonnage.
Nova Scotia.....	2,793	104	10,371	464,194
New Brunswick	981	93	9,450	209,460
Prince Edward Island....	231	18	3,678	26,080
Quebec.....	1,399	270	71,962	164,003
Ontario	1,312	709	88,032	138,738
Manitoba	79	50	5,365	6,475
British Columbia.....	196	120	17,997	16,024
Total.....	6,991	1,364	206,855	1,024,974

Tonnage registered in the different ports of Ontario and Quebec, where most of the lake vessels are owned, is shown in the following tables:

ONTARIO PORTS:	Number of Vessels.	Number of Steamers.	Gross Tonnage Steamers.	Total Tonnage
Amherstburg.....	2	...	.....	114
Belleville	14	7	502	865
Bowmanville.....	3	...	.....	426
Brockville	31	28	767	839
Chatham	26	15	1,089	1,651
Chippawa	3	2	263	153
Collingwood	45	43	5,012	3,872
Coburg	6	2	51	474
Cornwall	3	2	178	214
Cramahe	2	...	.....	278
Deseronto.....	7	5	881	774
Dunnville.....	9	5	636	1,027
Goderich.....	38	19	810	1,991
Hamilton	45	28	7,740	7,368
Kingston.....	202	72	9,939	24,755
Morrisburg	3	1	54	382
Napanee	8	3	302	922
Oakville.....	4	...	.....	323
Ottawa.....	177	91	10,624	18,896
Owen Sound.....	32	29	4,826	3,379
Port Arthur.....	4	4	361	244
Port Burwell.....	16	6	167	2,008
Port Colborne.....	6	2	95	680
Port Dover.....	16	4	131	1,073
Port Hope	63	38	2,796	5,642
Port Rowan.....	7	1	168	935
Port Stanley	9	7	1,754	1,409
Pictou	32	9	450	2,950
Prescott	27	13	613	3,885
Sault Ste. Marie	12	10	512	576
Sarnia	25	18	8,464	6,682
Saugeen	6	6	402	275
St. Catharines.....	128	56	9,948	21,084
Toronto	206	136	11,350	14,565
Wallaceburg	42	22	1,460	2,593
Whitby .....	...	.....	.....	.....
Windsor	53	25	5,687	5,433
Total.....	1,312	709	88,032	138,738

QUEBEC PORTS:	Number of Vessels.	Number of Steamers.	Gross Tonnage Steamers.	Total Tonnage
Amherst.....	30	.....	.....	1,098
Gaspé	39	1	709	2,397
Montreal.....	469	143	51,286	80,915
New Carlisle.....	15	3	49	789
Perce	2	.....	.....	133
Quebec	844	123	19,918	78,671
St. John's.....	...	.....	.....	.....
Total.....	1,399	270	71,962	164,003

Slow Figuring for New Ships.

Lake shipbuilders have begun to look for some new work, on account of the usual talk of building at this time of year, but outside of the big wooden boat upon which Capt. James Davidson has begun work at West Bay City, nothing definite can be said. The Globe Iron Works Company of Cleveland had been figuring with Mr. M. A. Bradley on a steel tow barge, for which an outline of plans had been prepared, but this, as well as other negotiations with Cleveland owners, is understood to have ended without an understanding of any kind. The builders and those among the vessel owners who might be expected to contract for boats are too far apart on prices to expect any immediate movement toward an increase in tonnage. This evidence of a disposition on the part of Mr. Bradley to build an iron boat is support of the opinion that no more wooden boats, at least of the larger class, will be built in Cleveland. The Bradley interests have up to this time built wooden vessels as against the tendency toward metal, and a general expression of surprise has been heard that such should be the case in a fleet that is the largest individual one on the lakes. If two or three more steel boats are built for the Minnesota Iron Company as is expected, it is probable that the work will go to the Chicago Ship Building Company, on account of the Minnesota interests in the South Chicago yard. The shipbuilders are expecting contracts for a few boats from the passenger lines, and it is known that negotiations in this direction have been going on for some time past but here, too, there is a wide difference in prices.

Put Her on the Bank.

In connection with the comment attending the sinking of the steamer Pontiac by the Athabasca of the Canadian Pacific line, Capt. Wm. Mack recalls an occurrence in the St. Clair river a few years ago that has a significant bearing on this accident. The captain of the Athabasca says that his reason for giving the cross signal through which the Pontiac was sunk, was a fear of being forced into the bank of the river. It will not be admitted by the Pontiac's officers that there was not room enough for the two vessels to pass port and port as had been intended, with the Athabasca bound up and the Pontiac bound down, but the question arises, if such was the case, why did not the captain of the Athabasca run his boat out onto the bank, rather than take the risk of a collision with the lives of so many passengers at stake? The St. Clair river case now recalled is that of the steamer Boston of Buffalo and the Idlewild of Detroit meeting at Southeast bend. A collision was inevitable, and the captain of the Boston with cool forethought deliberately ran his boat out two or three feet on the bank. His action was approved in all quarters and he was rewarded later by being presented in Detroit, with a gold watch and chain by admiring passengers.

Big Canal Projects.

There is probably not in the history of the world a record of greater benefit to commerce from improvement of waterways than that derived through government expenditures on the Great Lakes during the past few years. Success attending the building of St. Mary's Falls canal and other big works on the lakes has urged on the completion of similar projects in different parts of the world, and there seems to be no doubt now that a deep waterway from the lakes to the seaboard will follow this evidence of the importance of carriage by water. Projects of as great magnitude as the proposed radical enlargement of the Erie canal are now under way in places where there is not as great a demand for them as that presented by the inland commerce of the American northwest. In England the Manchester ship-canal is a wonderful undertaking, and the Corinth canal is making steady progress but they are all dwarfed by the Nicaragua.

Another great work about which little has been heard of lately is the canal uniting the Baltic and North seas. The work

is being carried out by the German government, and is the most important engineering enterprise Imperial Germany has yet undertaken. It was inaugurated in June, 1887, by the old Emperor William, and since that time it has been making steady progress. The canal will be 61 miles long. There are no gates except at the two extremities, and these are of gigantic proportions, consisting each of an outer harbor, double sluice chambers, and a canal harbor. The canal is 66 feet wide at the bottom and 108 feet at the lowest water-surface level, and the depth throughout is 28 feet. These dimensions are sufficient to allow two large ships to pass each other; but there are, besides, seven spacious passing places. It is expected that the canal will be opened for traffic in 1895. The aggregate tonnage of the shipping plying between the Baltic and the North Sea amounts to over 12,000,000 tons, so that the canal will be of great service to commerce.

New Dry Docks.

Dry docks now nearing completion at Cleveland, Detroit and Port Huron will add greatly to facilities in this line of the lake business. The Cleveland dock is the second one constructed by the Ship Owners' Dry Dock Company and will be ready for work in a few days. The Detroit dock, at the Orleans street yard of the Detroit Dry Dock Company, will be the largest on the lakes, but will hardly be ready for business before the close of the present season. The Port Huron dock is also of modern size and is being constructed by Dunford & Alverson.

Work on the removal of the cofferdam of the Ship Owners' new dock, Cleveland, has been commenced and the dock will be opened during the coming week. It is 300 feet long, 45 feet wide at the bottom, 90 feet at the top and 13½ to 14 feet on the 4 feet keel blocks. The pontoon gate is 55 feet wide. Three rows of piles surround the dock and over 1,500 piles, 500,000 feet of pine and about 500,000 feet of oak were used in the construction. The excavating was done under contract by John Stang. Either of the two new docks—the larger one has been in use but three years—can be emptied in an hour and a half. The pumping machinery has been moved to a position between the two docks and has been strengthened by the addition of a new boiler. The completion of this new dock gives Cleveland docking facilities equal to any other port on the lakes.

The Detroit dock is 375 feet long on the keel blocks, 91 feet wide at the top, 54 at the bottom and 16 feet deep on the blocks at the ordinary stage of water. Surrounding it, to give it perfect stability, is a heavy wall situated 12 feet from the dock and 8 feet wide, filled in with blue clay, pounded or puddled to a heavy, solid mass. This wall extends in depth all the way to the river. The width of the dock at the opening is 79 feet. It can easily accommodate the City of Detroit, the greatest beam of which astride the paddle boxes is not over 75 feet. For pumping purposes two Westinghouse compound engines are provided, the cylinders of each of which are 14x24x24 inches, giving a total horse power of 150. It is estimated that the dock when full will contain 3,500,000 gallons of water, which can be pumped out, using both engines, in an hour and a quarter.

The pontoon gate of the Detroit dock is an immense piece of work in itself. It was built at the Wyandotte yard and is shaped somewhat like a boat, 12 feet beam and 20½ feet deep.

It is now said that the claim of the Burt heirs of Marquette for royalty through patent on the device used in filling and emptying the St. Mary's Falls canal lock will be allowed by the government. Representatives of the departments of engineering and justice are said to have found that the device in use is similar to that patented by Mr. Burt when in charge of a part of the canal work. It was with reference to this claim that Acting Secretary Grant of the war department proposed a few weeks ago to close the canal for an investigation.

Record of Speed and Big Cargoes.

[Masters or owners are invited to report improvement on this list.]

Iron ore: Lake Michigan—Maryland, Inter-Ocean Transportation Company, of Milwaukee, 3,322 gross, or 3,737 net tons, Escanaba to South Chicago, draft 16 feet 6 inches; E. C. Pope, Dry Dock Navigation Company of Detroit, 3,221 gross, or 3,608 net tons, Escanaba to Ashtabula, draft about 16 feet. Lake Superior—E. C. Pope, Dry Dock Navigation Company, of Detroit, 2,781 gross, or 3,144 net tons, Ashland to Lake Erie, draft 14 feet 5 inches.

Grain: W. H. Gilcher, J. C. Gilchrist, of Cleveland, 114,982 bushels of corn, Chicago to Buffalo; America, M. M. Drake, of Buffalo, 111,507 bushels of corn, Chicago to Buffalo.

Speed: Owego, Union Line, of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Saranac, Lehigh Valley Line, of Buffalo, Buffalo to Lime-Kilns, 240 miles, 15 hours and 10 minutes, 16 miles an hour.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$.....	\$ 77 50
Champion Iron Company.....	25 00	.....	87 50
Chandler Iron Company.....	25 00	37 00	39 00
Chicago and Minnesota Ore Company.....	100 00	.....	100 00
Jackson Iron Company.....	25 00	90 00	.....
Lake Superior Iron Company.....	25 00	51 00	53 00
Minnesota Iron Company.....	100 00	71 00	75 00
Pittsburg Lake Angeline Iron Co.....	25 00	132 50	135 00
Republic Iron Company.....	25 00	25 00	26 00
Ashland .....	.....	.....	53 50

A second dividend for the new year of \$1 a share has been declared by the Lake Superior Iron Company but it is not payable until Oct. 1. The stock of this company as well as Lake Angeline, which pays the usual \$2 this month, is wanted in the market. Outside of this there is little disposition to trade, excepting in Republic, which is still changing hands on account of the uncertainty surrounding loss from the fire. Lake Superior stock seems to command even more support than during the past few years, and it is not uncommon to hear investors still refer to it as the property with the best future in Michigan, ranking next to the Minnesota among all Lake Superior mines. Recent developments at the Lake Angeline have drawn additional attention to that great mine, and there is none of the stock of either Lake Superior or Lake Angeline to be had at current quotations. The extent of damage on account of the Republic fire is still uncertain but it is generally believed that the decline in the value of the stock has fully discounted the loss. Even were the losses including detention to reach \$125,000 or \$150,000, the proportion would be but \$1 to \$1.50 a share. Work was again stopped at the mine Friday last, on account of the gases that have remained since the fire, and there is no telling when operations will be resumed. Mr. W. D. Rees, president of the company, is still looking after the preparations for a renewal of mining. Some Brotherton stock has changed hands here recently at \$2.50 a share. The Brotherton produces the best ore on the Gogebic range, although the extent of the mine is not great. The property has been worked conservatively and there is some talk of a dividend from it this year. A statement published in May showed that after paying all debts on the business of 1890, the company had a balance of about \$8,000 with 28,000 tons of ore on dock at Cleveland. This ore has since been sold, and operations at the mine this year were not resumed until the market had improved a little over first prices.

Shipments of ore from Ashland up to and including Wednesday August 19, were as follows: Ashland, 151,933 tons; Aurora, 38,212; Tilden No. 2, 3,409; Tilden, 19,303; Montreal, south vein, 25,425; Palms, 11,127; Sec. 33, Bessemer, 20,709; Carey, 47,800; Trezona, 15,759; Germania, 13,010; Iron Belt, 1,506; Mount Hope, 43,570; Norrie, 163,236; East Norrie, 76,725; Father Hennepin, 14,582; Federal, 929; Eureka, 10,380; Pabst, 60,038; Ruby, 913; Sunday Lake, 32,257; total, 736,248 tons. On the same date 502,956 tons of ore had been shipped from Two Harbors, the shipments of the Minnesota company aggregating 297,343 tons and that of the Chandler 205,613 tons. Ludington mine shipments aggregate 85,945 tons and the Hamilton 13,673 tons.

The Harvey Iron Company, which owns the fee of the eighty acres of land east of the Chandler Iron Company's property and now leased by the Zenith Mining Company, is said to have settled all of its contestants' claims. This is one of the Vermillion range mines that gives promise of a big showing in ore. Three lenses of high grade hematite Bessemer ore have been opened, showing the ore bodies to compare favorably with others on the range. The property is being developed with an idea of its producing 30,000 tons in 1892. The Duluth & Iron Range Railroad will be extended to the location.

The Michigan state board of equalization opened its session on the 17th inst., at Lansing, with representatives from seventy counties. It is the most important meeting ever held, as the special tax has been taken off mines in the upper peninsula and a direct tax substituted, making a difference of millions in equalization. The board will adjourn next week and make a tour of the state to determine valuation, especially of upper Michigan peninsula mines.

Michigan Iron Mining Company is the name of a new Gogebic corporation in which Horatio Pratt, C. W. Bowen and G. H. Downie of Ashland are interested. They have been developing property on the south range for several years, and the outlook is now so encouraging that they have organized a company placing the capital at \$800,000. They expect to have a railway to the property within a year.

Owing to the death of Mr. A. G. Nelson of Port Washington, O., president of the Tucarawas Mineral Land Company, a special meeting of the board of directors will be held in the office of the company, at Port Washington, for the election of a president to fill the vacancy. This company is the owner of the fee of the Youngstown and Manganate mines of the Crystal Falls district and 14,000 acres of other iron lands in the upper Michigan peninsula.

Shipments from the Monitor mine, Crystal Falls district, will undoubtedly reach 75,000 tons, as against 26,336 tons in 1890. About 30,000 tons has already been moved, and 20,000 tons will be sent by rail to the Illinois Steel Company after the close of navigation. The company is also shipping ore by rail to the National Furnace Company of De Pere Wis.

The Cleveland Iron Mining Company is sinking a sand shaft to the north of Ishpeming, and when the ledge is secured will place a diamond drill there to test the formations. The company has been drilling in this section for about a year, the object being to sell or lease property that does not bear iron ore.

The Norrie still carries about 70,000 tons in stock but it is not thought that the season's output will be more than 600,000 tons, as against about 1,000,000 tons in 1890. The mine now has a working force of about 950 men.

The Dunn mine recently shipped 6,000 tons of ore in one week and very little of it was taken from the stock pile which contains 30,000 tons.

Chignecto Ship Railway.

The Canadian parliament has extended the time for the completion of the Chignecto ship railway one year. In the debate over the proposed extension, it was stated that the total quantity of clay and rock excavated was 1,745,957 cubic yards, leaving 278,933 yet to be excavated. In addition to this the steel rails were all delivered, nearly all the hydraulic machinery, 1½ miles of single track laid and nine-tenths of the heavy iron sleepers delivered. The ship cradles were ready, the locomotives are being built in Kingston, and there remains but one mile of grading to do. The reason for the delay was that the company is obliged to excavate for the basins twenty-four feet deeper than the estimate, in order to reach a solid rock foundation. Another cause was the scarcity of labor, owing to the railway works in Annapolis and Cape Breton. The total expenditure thus far has been \$3,000,000, leaving \$2,500,000 yet to be expended in finishing the work.

THREE DOLLARS FOR TWO—THE MARINE REVIEW AND DETROIT TRIBUNE (WEEKLY) ONE YEAR FOR \$2.

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 210 So. Water Street, CHICAGO, Ill., Aug. 27.

The receipts of grain Monday and Tuesday were simply astounding after several weeks in which nominal receipts of corn had been the rule. Will the receipts hold out? Shippers had varied opinions, dictated much by their personal inclinations on the markets. One estimate said 15,000,000 bushels of corn would arrive in Chicago during September. Another said that this corn was rushed in as the result of the talk about a corner in September corn, and that they would soon fall back to the old figures. Vesselmen believed that the corn was to keep right on coming until every bin in the west had been scraped dry. That is what made vesselmen feel rather good on Monday and Tuesday. Mark this prediction. From Sept. 1 the shipments of grain from Chicago will be the heaviest in the city's record. Vesselmen can depend on good rates, which will not break every time one or two extra boats put their noses in the river. For wheat $2\frac{3}{4}$ cents will be about the bottom figure. Even with the lessened shipments last week vesselmen held tenaciously to $2\frac{3}{4}$ cents and were only beaten back by a hard effort, the rate returning at the first chance.

John Gordon, general manager of the Northern Steamship Company, who was in town Monday on his way home from St. Paul, took a most cheerful view of the freight situation on Lake Superior for the rest of the season. His idea was that vesselmen were to be choosers not beggars, from now until December, and that freight would come faster than the boats could handle it. As Mr. Gordon had come direct from a conference with President Hill of the Great Northern Railroad, he had good reason for the faith that was in him. Mr. Gordon when in Chicago goes on 'Change as the most natural spot for him in the whole city. He was talking to Mr. McMillan, Monday, when he exclaimed "I am surprised to see that Old Hutch is back." "Where is he?" Mr. McMillan asked excitedly. "Here he comes now" Mr. Gordon replied, pointing to Mr. Morford, and then the three line agents who worked together and against each other, had a lemonade at Mr. Morford's expense.

The Chief Justice Waite was caught at Michigan City with 400 or 500 excursionists Sunday morning by the northeaster. She was six hours running to Chicago, and when she came in the harbor she had a bad list, indicating that there was water in her. Saturday night the John A. Dix in going to Milwaukee with 600 excursionists was caught off Racine by the northeaster, and her experience between Racine and the Cream City was the theme of some sensational newspaper articles Sunday morning. One reporter who has as little sense as a man can have in the newspaper business, wrote a learned article in which he proved to his satisfaction that the Dix was unseaworthy and ought to be condemned. As a matter of fact, the Dix is a good sea boat and has been kept in fine repair. Marine men on the river who are good judges say she is in splendid condition throughout. As much cannot be said of the Chief Justice Waite. She is too low in the water for a sea boat, and ought never to have been taken off the river. She has a suspicious drop forward and aft, which does not speak well for the staunchness of her timbers. There is no comparison between the two boats. Both are to be blamed, however, for going out at all with the northeaster predicted. That no lives were lost is due more to good luck than anything else.

Local marine men who have had anything to do with ocean navigation rather discredit the story of the inhuman treatment on board the Dutch steamer Ohdam. They say that the firemen on the Atlantic steamers are virtually the bosses of the ranch, and that vessel captains have to be very careful as to the way they treat them, or else there will be no firemen on the next trip. The firemen maintain a sort of tyranny over the entire ship and do about as they wish.

Damage to the Grain Crop Considered.

Special Correspondence to the MARINE REVIEW.

DULUTH, Minn., Aug. 27.—The reports from the west are not so favorable as they have been for some time past. Saturday night there was a frost over all the country north of the Northern Pacific line and undoubtedly considerable damage has been done to the wheat. How much has been destroyed it is as yet impossible to estimate. One report says it is so great as in 1888, others think it will be inconsiderable. It hardly seems probable that the worst reports can be true and that the amount of wheat to come to Duluth will be greatly reduced. I still think this market will receive at least 30,000,000 bushels of the crop. Last week wheat shipments by lake were 347,900 bushels, taken out by the T. W. Palmer, Tacoma, J. M. Nicol, John Owen and G. G. Hadley. Rates are now easy at $3\frac{1}{4}$ cents, at which two boats, to load this week, were chartered on Saturday. Stocks here Monday were down to 96,500 bushels, the lowest on record here for a number of years. There were 256 cars on track, however, mostly of Minneapolis wheat sold for export. A few cars of new wheat have been received and the movement will be general in a week or ten days, after which there will be plenty for the vessels. In 1888, during October and November about 11,000,000 bushels of wheat were shipped

from Duluth, and the record will probably be surpassed this year, if the demand abroad keeps up.

Ore shipments from Two Harbors last week were 53,000 tons, a record breaking amount. Up to date the season's shipments have been 519,000 tons, against 555,000 tons for the same time last week. The E. C. Pope took out 3,013 tons last Monday. She arrived at Two Harbors Sunday night and was out with her cargo at 5 o'clock Monday morning. She went to South Chicago.

Harbormaster Miller is after vesselmen who dump ashes and garbage in the harbor and slips and some of them will suffer if the practice is not stopped. The city ordinance on the subject provides for a fine \$100 or imprisonment for sixty days.

William Berman, a deck hand on the Nicol, lost his left foot here Friday. He was looking through a port hole watching the line as the vessel was being made fast to elevator D, and did not notice that his foot was in a loop. The loop closed with a sudden jerk, striking his foot against the timber head and cutting it off as neatly as if an ax had been used.

Members of congress and newspaper correspondents continue to arrive on the trips provided for them by the Vessel Owners Association. Your correspondent has talked with a large number of them and all express themselves as surprised at the magnitude of the commerce of the lakes and were impressed with the importance of fostering it by government improvement of channels and harbors as they never were before. These visits will do a vast amount of good. They are removing, as nothing else could do, the long-standing and to lake men and shippers unexplained ignorance, on the part of leading public men of the magnitude of the lake interests.

Kingston Harbor Matters—Freight Regulations.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Aug. 27.—Range lights have not yet been placed in the Kingston harbor, notwithstanding its great importance in the Canadian grain trade. The government, however, has men still at work removing the shoals, but the speed at which the stones are being removed makes it beyond conjecture when the work will be finished. It is hoped that when it is completed the range light will be the next improvement.

The dry dock is now about completed. It has been filled through a siphon from the lake, to facilitate the removal of the dam. The latter work is being proceeded with.

The steadiness with which grain has poured in from the west this season has been a check on the coal carrying trade. Hitherto the forwarding companies had carried large quantities of coal to Montreal before this. The result will be that the boats will have to work to the latest possible moment. The K. & M. F. Co., however, has carried considerable coal, preferring that freight with money in it to grain with a mere escape attached to it.

The new bill introduced in parliament by the Hon. Mr. Tupper, minister of marine, provided for the carrying of cattle to the old country, has received its first reading and the probabilities are it will be passed as it stands. It will shut out of the trade all vessels which have not the proper accommodation. It provides that cattle can be carried on three decks only; that each fat beast must have 8x2 feet 8 inches, and stockers 8x2 feet 6 inches. A few cents per head will be placed on the cattle to pay for the inspection of pens, etc. It is expected that the bill will secure better accommodation for the cattle, prevent serious loss by bad ventilation, and thus enable shippers to better compete in the English markets. Twelve years ago Canada shipped only 100 head to England, last year the number was 123,000. This increase shows the necessity of the bill.

The United States revenue cutter Bibb is lying at the dock at Ogdensburg, and has not turned a wheel this season. The hull is in a very bad condition, caused by dry rot and the machinery is as bad if not worse than the boat. There is a report that the government will auction her off and place a new boat on the lake.

Work Begun on Davidson's Big Boat.

Special Correspondence to the MARINE REVIEW.

WEST BAY CITY, Mich., August 27.—Although Capt. Davidson stated a few days ago that he was "having plans made for the big 300-foot-keel steamer just to kill time," it is now certain that the boat will be built, as the keel is being laid. Capt. Davidson is still engaged in preparing a strong objection to his assessment by the local authorities, which, when compared with that of his competitors is found, he claims, to be entirely out of proportion, and he threatens to move out of the city unless it is reduced. The assessor placed the "Big Four" on the list of personal property belonging to Capt. Davidson and put his personal assessment at \$200,000. He went before the board of review and swore that the "Big Four" were built under contract for someone else and that they did not belong to him, and on that showing had his personal assessment reduced to about \$25,000. He has timber to the value of \$30,000 to \$40,000 sunk in the slips around his yard besides a large amount of other personal property, but it is not the rate so much as it is the fact that discrimination is shown in his case that makes the captain object.

Puget Sound's New Barge Town.

The McDougall steambarge W. L. Wetmore is about to leave Wilmington, Del., with \$500,000 worth of boilers and machinery, to be used in the shipbuilding plant and other manufacturing enterprises in the new town of Everett, on Puget sound above Seattle, where the capitalists interested in the barge company are engaged in building up a trade center, which it is claimed will soon outstrip all of the Puget sound cities. In the boat's cargo there are several engines and twenty boilers of different sizes. Superior advantages are claimed for the new town in which the barge shipbuilding plant is being constructed and it is claimed that capital will not be spared in making it the leading city of the new northwest territory.

If John D. Rockefeller, Colgate Hoyt and the other capitalists associated in the building up of this town display a spirit alike to that shown in the case of the barge company at Superior, there is little doubt that Seattle and Tacoma will take a back seat in the development of Puget sound industries. Seattle expects to ship about 3,500,000 bushels of grain this year, but it costs about \$2,000 in handling charges and tow bills to the sea to dispatch a sailing vessel of 100,000 bushels capacity under the present system of handling the grain, and three to seven days are taken up in loading a coal carrying vessel of 2,000 tons capacity. It is in the introduction of the lake system of handling these commodities that the projectors of the barges and the new town expect to succeed. The Seattle Mining News says of coal deposits in the district.

"Some of the features of the coal veins of Washington have a great bearing on the economic values of the mines. The high angles at which the veins dip, permit the veins to be traced on the surface and allow them to be opened by tunnels and the product to be extracted on a down grade, saving the large amount of money that hoisting would cost. The underlying and overlying sandstone is in thick seams, which stand so well, that the cost of timbering is light. Timber is very abundant and consequently cheap, making the cost of bunkers, trestles, etc., less than in other regions. Good water is abundant in quantity for water power, for washers, etc. The cost of breaking ground at the present price of labor is from 75 cents to 90 cents per cubic yard. The cost of freighting from any vein in western Washington to tide water will not exceed 75 cents per ton; in most cases half that amount will suffice. An abundance of coal could be profitably laid down at Puget sound ports at \$2.50 a ton. The same coal could be laid down at San Francisco at a cost not to exceed \$5 per ton. The consumer of Puget sound ports has paid for the last thirty-eight months an average of \$5.45 per ton, and the consumer of San Francisco \$8.15 per ton."

An Obstruction at Colchester—Buoys and Other Marks.

As a result of a meeting last week of the Cleveland Vessel Owners' Association, Capt. McKay made another trip to the vicinity of Amherstburg, returning Wednesday. Reports recently from captains of two big ore carriers were to the effect that they had struck near Colchester. It was generally thought that the obstruction was a sunken wreck of some kind, but Capt. McKay has found, after working for two days in the locality where the vessels grounded, that they undoubtedly struck a cluster of boulders in an extension of the shoal making out from Little's point. The shoal extends three-eighths of a mile farther south than is shown on the chart, and is in all $1\frac{3}{8}$ miles from the shore line, due south from Hackett's dock. The new shoal has been marked with a red spar buoy, having an evergreen bush attached. The buoy is in 20 feet of water but just inside of it there are large boulders with only 16 feet of water over them. While marking the spot Capt. McKay says he noticed most vessels running too close to the shoal. He suggests that masters give Little's point more of a berth, running Colchester reef nearer aboard. The striped black and red stake recently carried

away from the nest of rocks found only a short time ago between Bar point light-house and the lower black stake, mouth of the Detroit river, was also replaced.

In answer to a request from the association to Gen. Poe, that steps be taken to locate the shoal found several weeks ago below St. Clair Flats canal by the steamers Chemung and Corona, and that a snag in the same locality be removed, Lieut. Charles S. Richie of Detroit says in Gen. Poe's absence that the assistant engineer in charge of the St. Clair Flats canal has been instructed to make an examination of the locality.

Another subject that received the attention of the meeting last week, and upon which no settlement has been reached as yet, is the refusal of Commander Heyerman of Detroit to place four red spar buoys along the easterly side of the Grosse point channel, between the cluster of piles and the light-ship on Lake St. Clair, and two red and two black stakes at the approach to the lower end of the canal. Vessel masters claim that buoys are needed in these places but Commander Heyerman takes a different view of the question. The association has submitted correspondence on the subject to the light-house board.

A Talk With Capt Davidson.

"What about that 300-foot keel steamer the newspapers are building for you"? was asked Capt. James Davidson. "We are laying out the timber and will begin work on her within a week or two" was the reply. "I had the spars and finishing material and thought I might as well be doing something". It was rumored that prospects of the formation of a stock company to take the "Big Four" helped Capt. Davidson to this conclusion. He continued to tell why wooden vessels built from timber which had lain in Saginaw bay for some time were the best in the world. He claims that the waste water from the salt blocks along the river contains chemicals that act as a preservative to timber that becomes saturated. With reference to the building of large tow barges he said there was little or no money in them on account of port charges. "My idea of money-making boats" he added, "is embodied in the Adriatic and Baltic. I count them among my best investments. I didn't even put a bow-sprit on the Baltic; just built her well and gave her enough apparatus to handle herself in a heavy sea."

Carries More Corn Than Poetry.

As an introduction to a description of the Wetmore's trip to Liverpool and return, the Age of Steel of St Louis says: "The science of shipbuilding keeps pace with commercial necessities. From Noah's ark to a transatlantic steamer there is a tremendous distance both in time and skill. The floating menagerie in which Noah was a passenger and Providence the captain was equal to its duties, and its builders laid the lines that have served as a model for the ship architects of succeeding ages. Among the latest and most radical departure is what is known as the "whale-back". It is an American idea, and is strictly of the utilitarian type; it was designed for business, and has no pretensions to beauty. It dissipates the romance of a maritime exhibition; is indifferent to artistic criticisms, and carries more corn than poetry. It is a graduate of the Great Lakes, and the result of some years of experience and experiment. It is, of course built of iron, the plates of which are so laid as to give it the abdominal contour of a duck. It tapers at both ends, cigar fashion; the sides, if it can be said to have any, present a complete oval to the impact of the sea waves, and is, consequently, proof against an avalanche of salt water that might have a wish to make it into scrap iron, whilst the water that rolls over its upper side goes back again as freely as it came".

Chief engineers and purchasing agents will receive a handsome catalogue from the Wm. Powell Co., Cincinnati, O., if they will send their address on a postal card. They manufacture Powell's signal oilers that are in general use on a large number of triple expansion engines in lake steamers.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

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The books of the United States treasury department contain the names of 3,510 vessels, measuring 1,063,063.90 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The classification is as follows:

Class.	Number.	Tonnage.
Steam vessels	1,527	652,922.25
Sailing vessels.....	1,272	328,655.96
Canal boats.....	657	67,574.90
Barges.....	54	13,910.09
Total.....	3,510	1,063,063.90

According to the report of William W. Bates, United States commissioner of navigation, 46 per cent of the new tonnage of the country was built on the lakes during 1889. This is a percentage greater than the work of the Atlantic coast and western rivers combined, and almost equal to the whole work on the Atlantic and Pacific coast. In 1890 the tonnage built on the lakes is but very little less than that built on the Atlantic and Gulf coasts. Tonnage built on the lakes during the past five years was as follows:

	No. of boats.	Net Tonnage.
1886.....	85	20,400.54
1887.....	152	56,488.32
1888.....	222	101,102.87
1889.....	225	107,080.30
1890.....	218	108,515.00
Total.....	902	393,597.03

Tonnage passing through Detroit river during 234 days of navigation in 1889, amounted to 36,203,606 tons. Ten million tons more than the entries and clearances of all the seaports in the United States, and three million tons more than the combined foreign and coastwise shipping of Liverpool and London.

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014.

Entered at Cleveland Post Office as Second-class Mail Matter.

THE act limiting the liability of steam vessels, the abolition of the marine hospital fee and hundreds of other legislative measures highly beneficial to the merchant marine of this country were brought about through the intercession of the National Board of Steam Navigation, which has just finished its twentieth annual meeting in New York city. The board, which is made up of steam vessel owners on the coast and rivers, aims to protect the merchant marine against inimical legislation by state or nation. One subject discussed at the late meeting is the law of libel, which as it is now in force, permits any person having a claim, however small, against the owner of a vessel to bring suit without notice, and to libel the vessel just at the moment of departure, so that the owner is confronted with the disadvantage of paying an exorbitant or disputed bill, or suffering the losses of delay and litigation. The board will urge Congress to enact that notice of libel cannot be served later than six hours before the advertised or regular time of departure of the vessel in question. It would be difficult to settle the matter of time regarding lake vessels, in event of such a law applying to the lakes, on account of the rapidity with which vessels enter and leave ports in this vicinity, but it is nevertheless certain that there are abuses connected with libel proceedings here that will bear correction.

VESSEL owners of the lakes need expect no relief from the annoyance of grain shortages, which is now unusually severe, until they repudiate the bill of lading now in vogue in this branch of the lake business. This matter has been discussed in time passed by the Cleveland Vessel Owners' Association but no

action taken, and it is unfortunate that an organized effort is not made to secure a bill of lading that will give the vessels some redress. Judge Brown, now of the United States supreme court, decided at one time that the "cut throat" bill of lading now in use is not a good form of contract, but the New York courts have recently held the other way, and shippers of grain will in future make no concession to the vessels on account of this late decision. To hold that the vessel master can see the grain weighed in and out of his vessel is a poor argument, in view of the rapidity with which the work is done, the possibility of leaks in elevators, clerical errors, etc. The present system is certainly unfair to the vessel owner.

WHEN railroad companies have money a very large portion of it is put into new equipment and extensions and they are, accordingly, heavy buyers in the iron market. This is especially true of the new lines of the northwest where development in the past few years has been carried on to a most wonderful extent. These same railways are the great consumers of steam coal in the territory beyond the upper lakes, and it matters little now to the lake shippers of soft coal whether the winters are severe or not if the railways have plenty of business. These are features of northwestern business that demand the attention of lake interests in connection with the immense grain crop which is now assured beyond a shadow of doubt. There is profit in the crop movement for the railways and great prospects of a demand in the iron market on this account. In coal consumption the difference between moving five trains a day for a small grain crop and twenty trains under a big crop will be very marked.

In every case the congressman and Washington newspaper correspondents who have made the trip up the lakes as guests of the Cleveland Vessel Owners' Association return with expressions of the greatest surprise regarding the magnitude of the commerce. Figures and reports showing the amount of business done do not make the impression secured by personal observation in a trip of about 2,000 miles on a big metal boat. Newspaper interviews with the congressmen who have made the trip are being printed in different parts of the country, and they are unanimous in the opinion that steps must be taken immediately toward the construction of a deep-water outlet to the seaboard. The settlement of this question will, of course, demand a great deal of preliminary work, but it is important to lake interests that an impression favorable to the immense project has already been made where it will do much good.

THE Iron trade Review in its last issue presented figures showing that Cleveland received but 20 per cent. of the total receipts of ore at Lake Erie ports during the first half of the present season, as against 29 per cent. during the full season of 1890, while all other ports show a gain in receipts. The aim is to call attention to Cleveland's steady loss in receipts as compared with other ports. While it is true that a lack of facilities here has resulted in great loss to the city, the comparison this season is of light value, as labor troubles early in the season caused idleness on the Cleveland docks up to June while delay from the same cause at Ashtabula and other places was comparatively of little significance.

An aluminum steamboat is now running on the Lake of Zurich, Switzerland, says the Electrician. The boat weighs only about half a ton, or about half the weight of an ordinary boat of the same size. It was built at the works of Messrs. Escher, Wyss & Co. of Zurich, the metal having been furnished by the aluminum works of Schaffhausen. The boat carries eight persons, and, with a petroleum engine of two horse power, easily makes 6 miles an hour.

Any reader of the MARINE REVIEW who would like to have a specimen copy of the paper mailed to a friend can be accommodated by sending us, on a postal card, the name and address to which it is desired the paper sent.

Around the Lakes.

Capt. Peterson of Kingston is about to begin work on the construction of a small passenger boat.

Berryman Bros. of Toledo have purchased the tug Edward Shelby from Chicago parties for \$5,000.

R. B. Dear has been awarded the contract to rebuild a large section of Tower ship dock, West Superior, at a cost of \$10,000.

Charles Hubel and George A. Wolven have sold one-half of the propeller Oswegatchie to Charles Spademan of Marine City, for \$2,500.

Underwriters are desirous of letting a contract for raising the schooner Pomeroy, damaged by fire and sunk at Oak Orchard, Lake Ontario.

Work on the schooner Golden Fleece, ashore at Dunkirk, is now said to be suspended until Capt. Reid has raised the Pontiac sunk in the Sault river.

The steamer Ohio, which was sunk in the Sault river last season and has just gone into commission after receiving a rebuild at West Bay City, is given an A2 rating and a valuation of \$50,000 in Inland Lloyds. This is equal to her classification before being sunk.

Thomas Murphy, Detroit wrecker, is building a wrecking steamer from the hull of the old schooner Henry W. Johnson. The boat will be new from the water line up and will have twin screws and a Worthington independent condenser. She will not be ready for service until next spring.

Here are some of the big Lake Superior cargoes of ore taken from Two Harbors last week: E. C. Pope 2,691 gross tons, W. H. Gilcher 2,611, barge 107 2,413, S. R. Kirby 2,322, Marina 2,289, Matoa 2,252, Maruba 2,223, Manola 2,206, E. P. Weed 2,186, Mesaba 2,190, J. W. Moore 2,180 and Mariska 2,138.

Lake Michigan's lumber carrying trade is still very dull, notwithstanding improvement in other lines. Rates can not go any lower as they are already at bottom figures. The trade from the head of Lake Superior to Chicago had been paying fair rates but it is being overcrowded on account of the dullness on Lake Michigan.

At a United States marshal's sale in Chicago the steamer J. E. Rumbell brought \$1,840, the tug John Miner \$750 and the schooner W. H. Hawkins \$290. W. A. Russell has sold to S. E. Russel of Pentwater, Mich., the tug Vesta V. for \$600. The small steamer Daisy Day will be sold at marshal's sale, Milwaukee, Sept. 1.

Gilmore G. Scranton has commenced suit in the United States court in ejectment claiming \$35,000 damages against E. S. Wheelock, superintendent of the government canal at the Sault. Scranton claims the southwest pier, which is built out a quarter of a mile, encroaches upon his riparian rights. The case will be heard at Marquette next month.

The new shear-legs built at Wyandotte for the Orleans street yard of the Detroit Dry Dock Company are completed. When in place they will each be 108 feet above the water, with a lift of 97 feet. They are made of plates of steel bolted together, boiler fashion, and are expected to last forever. The old shears, with a lift of 82 feet, were put in place eighteen years ago, have never been repaired or replaced, and are good yet. They are of Michigan pine. The company thought they had trusted them long enough, and to guard against any possible accident by their giving away, decided on replacing them.—Free Press.

The Sheriffs Manufacturing Company wheel recently placed upon the steamer Thomas Davidson continues to do surprising work. On her last run up the Davidson covered the distance from Port Huron to Escanaba in twenty-nine hours, or at the rate of nearly 14 miles per hour. This is an improvement of fully 3 miles per hour over previous work. Com. Wolf has ordered wheels of the same pattern for the steamers W. H. Wolf and Fred Pabst, and it is understood that similar wheels will also be placed upon the steamers R. P. Flower and F. L. Vance, owned by the Milwaukee Steamship Company.—Milwaukee Wisconsin.

The Evanston life saving crew, who recently introduced into the service a method of righting the self-bailing life-boat, are now engaged on a new experiment with the boat. It is that of lashing themselves to the bottom of the boat after it has been capsized, so that they can not be washed from it in a heavy sea and can more easily handle an unconscious person. Lake Michi-

gan was smooth when a trial of this work was made a few days ago. The crew executed some pretty maneuvers, and when about a quarter of a mile out lashed the oars to the seats and capsized the boat. They then climbed upon the bottom and lashed themselves to the boat. After successfully performing this feat the boat was righted. Capt. Lawson four times put them through the drill of capsizing, and succeeded in lowering the record to 27 seconds.

Capt. Maguire, for years keeper of the Marquette light is one of the oldest and most valued light-keepers on the lakes. His record is such that in his old age the light-house inspectors have winked at an arrangement by which Mrs. Maguire has been his assistant, though this is a fog signal station and women assistants are forbidden by the regulations. The captain did all the work and two checks were regularly made out by the department. In March, without giving previous notice, Mrs. Maguire decided to visit her sisters in Chicago, and on the next visit of the inspector the captain reported her for absence without permission. Since her return she has regularly secured at the postoffice the check bearing her name and used the money in ways unknown to her husband. Mrs. Maguire's official head has now been taken off. Capt. Maguire's action in promptly reporting his better half for absence from duty without permission is characteristic of the old keeper.

Facts Worth Remembering.

The lowest possible temperature of a furnace when combustion is going on is never less than 1,000 degrees Fahrenheit.

Air at its maximum density, 14.7 pounds, will rush into a vacuum at the rate of 1,300 to 1,400 feet per second.

A mile below the surface of the sea the pressure per square inch is estimated at one ton.

A unit of heat is the amount required to raise one pound of water one degree Fahrenheit.

For every pound of coal consumed 156 cubic feet of air must pass through the grate.

One pound of coal will raise 60 pounds of water from 32 to 212 degrees Fahrenheit, and about 1,004 Fahrenheit units of heat disappear in the conversion of one pound of boiling water into steam.

One pound of coal will evaporate 15 pounds of water from 212 degrees, while one pound of petroleum will evaporate 22 pounds of water.

About 31 per cent. of fuel is wasted by escaping in gases through the stack.

To learn the horse-power of an engine, take the area of the piston in square inches (multiply the diameter of the piston in inches by itself and multiply the product by .7854) by the mean pressure per square inch piston (one-half the lowest boiler pressure that will give the engine full speed) then multiply this product by the speed of the piston in feet per minute (multiply the length of stroke by two, then multiply the product by the number of revolutions per minute the engine is making), now divide this last product by 33,000 and the result will be the horse power. This rule is for slide-valve engines and one half of what the vacuum register shows must be added when you are figuring horse-power of condensing engines.—Key to Steam Engineering, published by the Mason Regulator Co., Boston, Mass.

Cleveland Matters.

Capt. Hewett of the whaleback A. D. Thomson claims 15 miles an hour for his boat on a recent trip running light from Cleveland to Toledo for a cargo of coal.

The stem and stern frames for the government light-house tenders were put in position at the yard of the Globe Iron Works Company this week. The yacht for Mr. Hanna is in frame and about ready for plating.

An idea of the immensity of the new sheer-legs being erected at the Globe yard can be gathered from the fact that the screw is of forged steel, 60 feet long and 7 inches diameter. It was forged by the Cleveland City Forge.

Collector of Customs M. B. Gary says he has received a number of complaints recently from revenue cutter officials of the neglect of masters in the Cleveland district to answer signals when meeting other vessels. This is one of the evils which Cleveland vessel owners have sought to guard against in special instructions to their masters. It is a violation of the rules of navigation and the collector of customs says he feels compelled to levy fines in the hope of bringing negligent masters to account.

Atlantic Record Breakers.

The Atlantic liner Teutonic which made the voyage from Queenstown to New York last week in 5 days, 16 hours and 31 minutes, thus breaking all previous records, maintained an average speed per hour of 20.35 knots, or 23.40 miles. The horsepower was at times as high as 20,000, and from that down to 15,000. The coal consumption was about 300 tons every twenty-four hours, and the average revolutions of the screw were about eighty to the minute.

This is a list of steamers that have broken the ocean records since the transatlantic lines began to call at Queenstown for their mails in 1861, the time always being reckoned from the moment the steamers passed the Roche light, at Queenstown, until they arrived off the Sandy Hook lightship:

Date.	Steamers.	Days.	Hours.	Minutes.
1866	Scotia.....	8	2	48
1873	Baltic.....	7	20	9
1875	City of Berlin.....	7	15	48
1875	Germanic.....	7	11	37
1877	Britannic.....	7	10	53
1880	Arizona.....	7	7	23
1882	Alaska.....	6	18	36
1884	Oregon.....	6	11	9
1884	America.....	6	10	00
1885	Etruria.....	6	5	41
1887	Umbria.....	6	4	42
1888	Etruria.....	6	1	55
1889	City of Paris.....	5	19	18
1891	Majestic.....	5	18	8
1891	Teutonic.....	5	16	31

Entitled to Limitation of Liability.

A recent decision of the United States supreme court is to the effect that river boats are entitled to the full benefit of the law limiting liability. The court says: "Navigable rivers, though tideless, are subject to the maritime law and the admiralty jurisdiction of the United States, and the act of June 19, 1886, Section 4, which extends the benefit of the limited liability act to the owners of steam boats used on a river in inland navigation, is a valid and constitutional law, being an amendment of the maritime law to which they were already subject."

Hennepin Canal Route.

After several routes for the proposed Hennepin canal had been suggested and rejected by the war department at Washington, the secretary of war last week issued a special order delegating to an appointed committee the power to decide between the proposed north and south routes. Its decision will be final and work will be commenced forthwith on the route thus deemed most practicable. Gen. O. M. Poe of Detroit, Major Alexander Mackenzie of Rock Island and Capt. W. L. Marshall of Chicago constitute the board of engineers thus appointed, and they are now engaged in considering the question. Capt Marshall is a strong advocate of the south route and Maj. Mackenzie has a slight preference for the north route, so that Gen. Poe's opinion will probably dictate the sealed decision to be sent to Washington.

Superior's Share of the Grain Business.

Through the Great Northern and Northern Pacific railway interests at Superior that port is certainly giving Duluth a warm race for northwestern business. Superior elevators handled 9,500,000 bushels of wheat during the crop year 1890, in addition to a big share of the coal and package freight trade. This is a good showing for the Wisconsin port on a light grain crop, and it is more than probable that its proportion of the big crop now being harvested will be largely increased. In preparation for the extra business, the Great Northern has added ten engines and 800 cars to its equipment, while the Northern Pacific company's increase is fifty engines and 1,400 cars.

SUBSCRIPTION TO THE MARINE REVIEW IS \$2 PER YEAR, BUT IF YOU SUBSCRIBE DURING THE NEXT 60 DAYS YOU WILL RECEIVE THE DETROIT TRIBUNE (WEEKLY) ONE YEAR, FREE OF CHARGE.

Wholesale Merchant—Stoker on a Steamer.

A few lines in the daily papers several weeks ago gave information that a fireman on the steamer Griffin had been taken ill and died before he could be removed from the boat at Port Huron. He was merely a grimy stoker but to his earlier life is attached a brighter story. His brother writing to Capt. Green of the Griffin says that twenty-five years ago this stoker, whose name was G. Ernst, was a young, well-to-do wholesale merchant in New York City. He was becoming wealthy very fast and from a gay club life soon drifted into drinking to excess. It took some time for him to squander the money he had accumulated but at last it all went. Then he tried to overcome his weakness, but failed and soon drifted away from his home until all knowledge of his whereabouts was lost. The news of his death was the first information his wife and brother had of him for many years. The life stories of some of these men that put in their summer in the fire-holds of lake steamers would make interesting reading.

A New Power—Heated Air and Steam.

Some trials made by an English engineer, Edward Field, seem to indicate that a new power has been discovered. This new power that is to bring about a mechanical revolution consists of heated air, steam being used as an auxiliary. The results given show that heated air and about 15 per cent. of the usual amount of steam performed the work for which the whole amount of steam had been required. The experimental apparatus consists of two measuring chambers of different capacities and a working cylinder with a weighted piston. At first, steam was admitted to both measuring chambers at 60 pounds pressure. This steam, representing twenty volumes, admitted to the working cylinder raised the piston with a load of 171 pounds to a height of 5½ inches. Then the small chamber was filled with steam at 60 pounds and the large chamber was filled with heated air at a temperature of 400 degrees Fahrenheit. The proportions were two of steam and sixteen of heated air, and as soon as the steam was admitted to the air the guages on both chambers showed 60 pounds pressure per square inch. The admission of steam and heated air to the working cylinder lifted the weighted piston 7½ inches, the full length of stroke. The second admission lifted the piston more rapidly, giving the cylinder covering a violent blow, while the second admission of steam alone lifted the piston only 4½ inches. The proportion of two parts steam to sixteen of air gave the best results and did almost twice the work as twenty parts steam.

The principals here involved have been put in practice by Mr. Field in a portable engine, which, however, has several drawbacks in consequence of the mixing chambers having to be superadded to the existing engine works. These chambers are mounted on the top of the engine cylinder, and there is a chamber for each end of the cylinder. Each of these chambers in turn receives its charge of heated air, into which is delivered a proportionate charge of steam. The mixture is delivered from each chamber alternately to the front and the back end of the cylinder, causing the outstrokes and the instrokes of the piston in succession. The engine was first run with steam alone and without a load. It was then run with combined steam and heated air in about the proportions previously stated. It may be mentioned that the temperature in the air chamber should not be less than 400° Fahrenheit for the proper development of the advantages of the system. As a matter of fact the air temperature during the engine trials was not higher than 300°, but was generally much lower, owing to the draughts and to the inefficient construction of the heating apparatus. On comparing the results of the two engine runs made respectively with pure steam and with combined steam and heated air, it was found that there was an absolute gain of 44 per cent. in favor of the Field system as against ordinary steam.

CHAUTAUQUA, NIAGARA FALLS AND TORONTO.—The last excursion of the season to Niagara Falls and Toronto, via the Erie Railway, Thursday evening, September 10. Special train departs from Central passenger station at 8:00 p.m. \$3 to the Falls, \$4 to Toronto. Secure sleeping car space early. City office 141 Superior street.

Send 75 cents to the MARINE REVIEW for a Binder that will hold 52 numbers.

Reid Meeting with Success on the Pontiac.

It is more than probable that Wrecker Reid's plan of placing a bulkhead of heavy timber forward in the steamship Pontiac, sunk in the Sault river, will result in the boat being raised before the close of the present week. In a test made a few days ago the water between decks was lowered at the rate of $4\frac{1}{2}$ inches an hour but the pumping facilities were not equal to requirements. Additional pumping power has now been secured and there is little doubt that the boat will be speedily raised. A force of about 30 men and several divers has been at work on the wreck. In getting in the oak timber and planking for the bulkhead which was built up in a very short time, it was necessary to remove a great deal of machinery, chain lockers, and other obstructions in the forward part of the boat. This with the work of tearing off broken plate in places and removing other debris has made the job a difficult one. Reid gets a quarter of the value of the boat and cargo as fixed by appraisal when delivered in dock and not a quarter of their value before the accident. The steamer Athabasca left the dry dock at Detroit, Tuesday, for her first trip up the lakes since the collision with the Pontiac about a month ago.

Quick Work.

The big steel steamer Northern Light, with 23,000 barrels of flour, reached the Lackawanna dock, Buffalo, at 10 a. m. Monday. Taking an hour for dinner, she was finished at 6:20 p. m. Most of the time three gangs were worked, a fourth assisting for a short spell. Over 2,300 tons of flour was thus handled in 5 hours and 15 minutes.

The steamer Grecian of the Menominee fleet left Cleveland Wednesday, Aug. 19, at 7 p. m., and delivered 2,650 tons of ore here Sunday, Aug. 23 at 2 p. m., making the trip port to port, 1,094 miles including time of loading in 3 days and 19 hours.

Notices to Mariners.

Commander Nicol Ludlow of Chicago gives notice that the buoy reported adrift from the Ten-Foot shoal off Point Peninsula, north end of Green bay, has been replaced.

On or about Sept. 15 the light at Porte Des Morts, Pilot island light station, entrance to Green bay, will be changed from a flashing white light every minute to a fixed red light. The order of the light will not be changed.

The light-house board gives notice that on or about Sept. 10, the light at Menominee pier-head, Green bay, will be changed from a fixed red light of the fifth order to a fixed red light of the fourth order. The light should be visible in clear weather from the deck of a vessel 10 feet above the level of the lake, $11\frac{3}{4}$ statute miles.

Some of the deep-laden vessels have been grounding in entering Ashtabula Harbor, and Capt. McKay of the Cleveland Vessel Owners' Association who made soundings there a few days ago, finds that boats must keep a little to the west of the center of the river, as in some parts of the channel toward the east pier there is but little more than 14 feet of water.

Ratio Between Power and Speed.

A subject exciting much interest among mechanical engineers just now refers to the correct ratio between the power and speed of a vessel. The old and standard ratio is that the power increases as the cube of speed. Of course in this calculation the coal consumption is the measure of the power, but it has been calculated that this ratio is incorrect, and we are trying to determine the exact figures, which would be of great value to the mechanical world. We have come to face the unalterable fact that steam pressure has its limits, and consequently that water speeds are rapidly approaching the maximum. The speed of ships has been increased more rapidly in the past two decades than at any other period since men began to float on the water, going up from twelve and possibly fourteen knots in the sixties to the maximum average of twenty knots. Until we find some other material than the common steel with which the modern boilers are made we must be content with our present pressure. There are plenty of materials that are well adapted for such a purpose, such as some of the new alloys, but they are too costly and rare to be put into boilers.—Safety Valve.

Buffalo Punch, Shear and Bar Cutter.

The combination tool illustrated below, was recently perfected and placed upon the market by the Buffalo Forge Company, Buffalo, N. Y. This machine will interest shipsmiths, shipbuilders and machinists. This company has long been noted for producing improved labor-saving devices for the blacksmith trade. This combination tool is the only tool so constructed that it may be used for either punching, shearing or bar cutting without adjusting or stopping work. It is always ready for these three uses, and does not require a helper. Special claims are made for the items of power, durability and compactness. Three years of continuous service in the most trying work before placing it upon the market assured the manufacturers that the machine could not be bettered. This tool is made in four



sizes: No. 1 will shear $\frac{1}{4}$ -inch strap iron $1\frac{1}{2}$ inches wide, will punch $\frac{1}{8}$ -inch holes in $\frac{1}{8}$ -inch iron and cut off $\frac{5}{8}$ -inch iron. No. 4, the largest size, will shear $\frac{5}{8}$ -inch strap iron, 3 inches wide, will punch $\frac{1}{2}$ -inch holes in $\frac{1}{2}$ -inch iron and will cut off $1\frac{1}{4}$ inch iron. The intermediate sizes, of course, are designed for the work between the above two capacities. All parts of the machine are made to a standard size and so well fitted when put together, that the result is a perfect machine with all parts interchangeable. The unique mechanism consists in a combination of levers so arranged that the cutting is done from the bottom. This feature enables one man to do more work than two could with any other old style down-cut machine where the pressure comes against a dead weight.

Official Numbers and Tonnage.

The bureau of navigation, W. W. Bates, commissioner, assigned official numbers to the following lake vessels during the two weeks ending August 22: Steam—Yulu, Port Huron, 340.65 tons gross, 208.09 net, No. 27,647; Frank P. Geiken, Grand Haven, 35.57 tons gross, 22.03 net, No. 120,861; F. E. Smith, Cleveland, 32.44 tons gross, 16.22 net, No. 120,862; Protection, Cleveland, 91.03 tons gross, 72.22 net, No. 150,543. Sail—Bon Ami, Chicago, 5.72 tons gross, 5.43 net, No. 106,875; Jennie, Detroit, 53.08 tons gross, 50.43 net, No. 76,976. Unrigged—Barge 115, Buffalo, 1,169.11 tons gross, 1,110.66 net, No. 53,268; barge 116, Buffalo, 1,169.11 tons gross, 1,110.66 net, No. 53,269.

Engineering of London says that it has good authority for saying that Sir John Burns and his co-directors of the Cunard company have made a contract with the Fairfield company for a steamer which will break the last record on the Atlantic. The new vessel will be 600 feet in length. Her tonnage will be over 12,000, and she will have twin screws. The speed of the new vessel is to be 22 knots and 21 at sea, so that there is every prospect of the voyage being reduced to five and one-half days. The building of the vessel is to be proceeded with at once, and she is to have a few preliminary runs before the Columbian exposition.

NIAGARA FALLS AND TORONTO.—The Erie Railway Co. will run its last excursion of the season to Niagara Falls and Toronto, Thursday, September 10. Special train leaves Erie depot 8:00 p. m. \$3 to Niagara, \$4 to Toronto. Secure sleeping car space at 141 Superior street or Erie depot, South Water street and Viaduct.

SEE CAPT. PECK'S LETTER Regarding Incandescent Lighting Plant on the Steamer S. R. KIRBY.

NORTHWESTERN TRANSPORTATION CO.

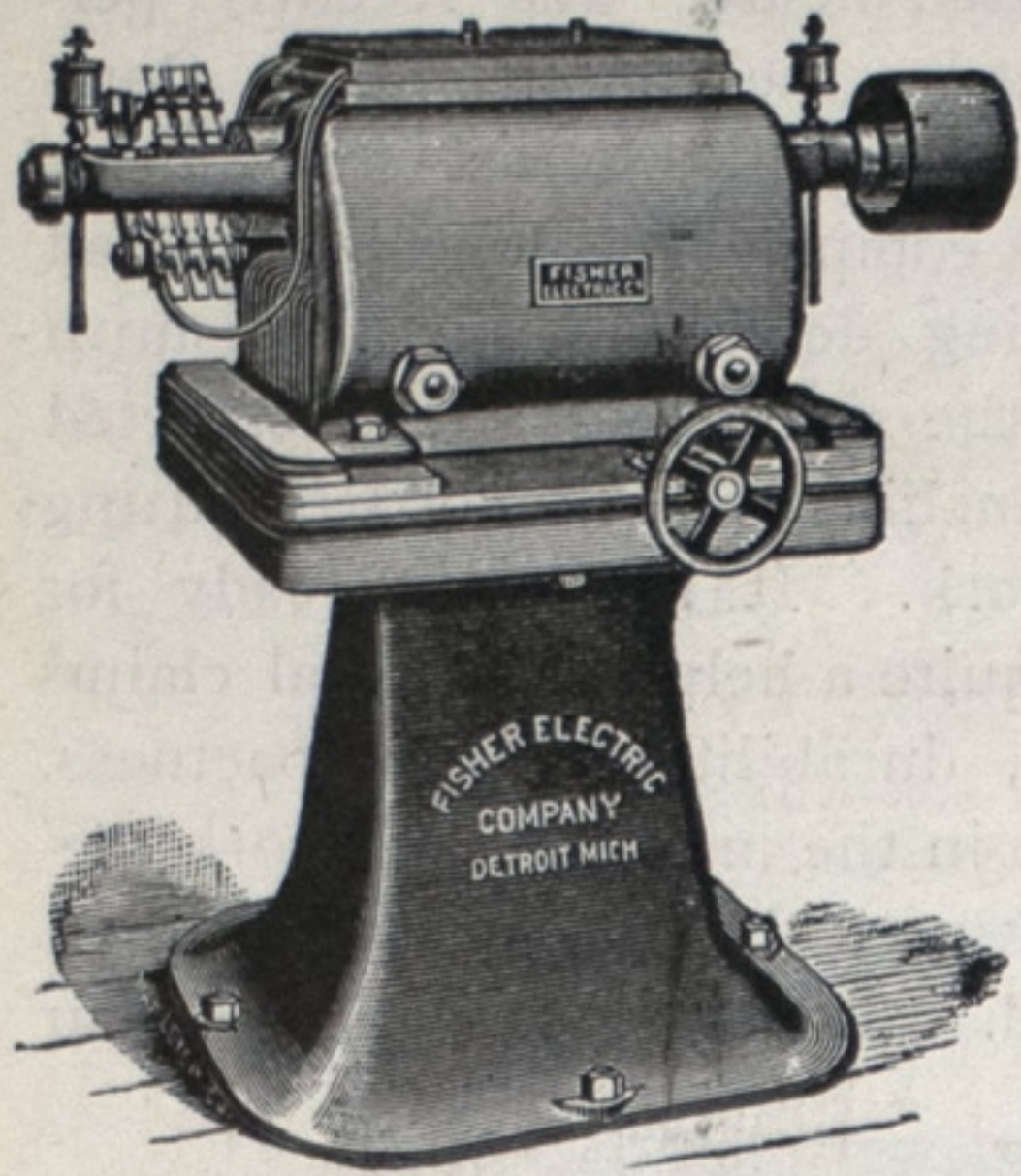
DETROIT, MICH., Oct. 7, 1890.

FISHER ELECTRIC CO.,
Detroit, Mich.,

GENTLEMEN:—Replying to your inquiry regarding the operation of the 200 Light Incandescent Plant placed on the Steamer S. R. Kirby, we wish to say that the plant has operated during the season without an interruption and has not cost us one cent. No Lamps have been broken, and we would not be without it. Very truly yours,

E. M. PECK, President.

FISHER ELECTRIC COMPANY, 183, 185 & 187 Larned St., West, DETROIT, MICH



VESSEL AND MACHINERY EXCHANGE.

Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 510 Perry-Payne Building, Cleveland, O.

64—For Sale at a Bargain—Steamboat 78 feet over all, 18 feet beam; double engines; hull in first-class condition.

65—For Sale Cheap—Two 10 x 10 Marine Engines with two 4 feet 4 inch wheels; good shafting, heater, boiler, steam pump and connections; or will exchange for small yacht or real estate.

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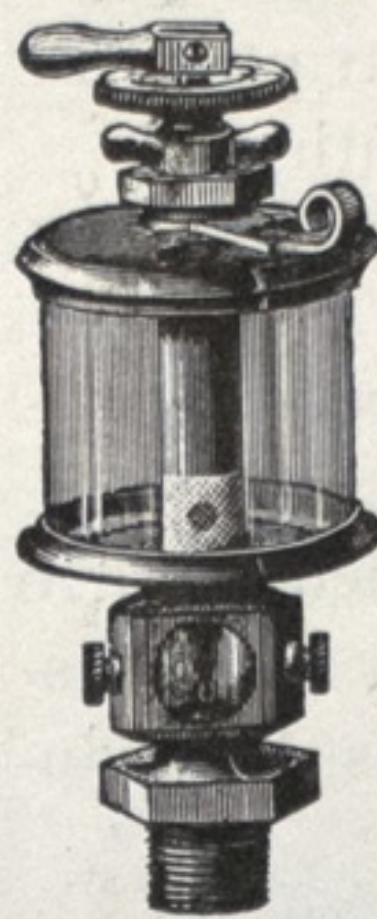
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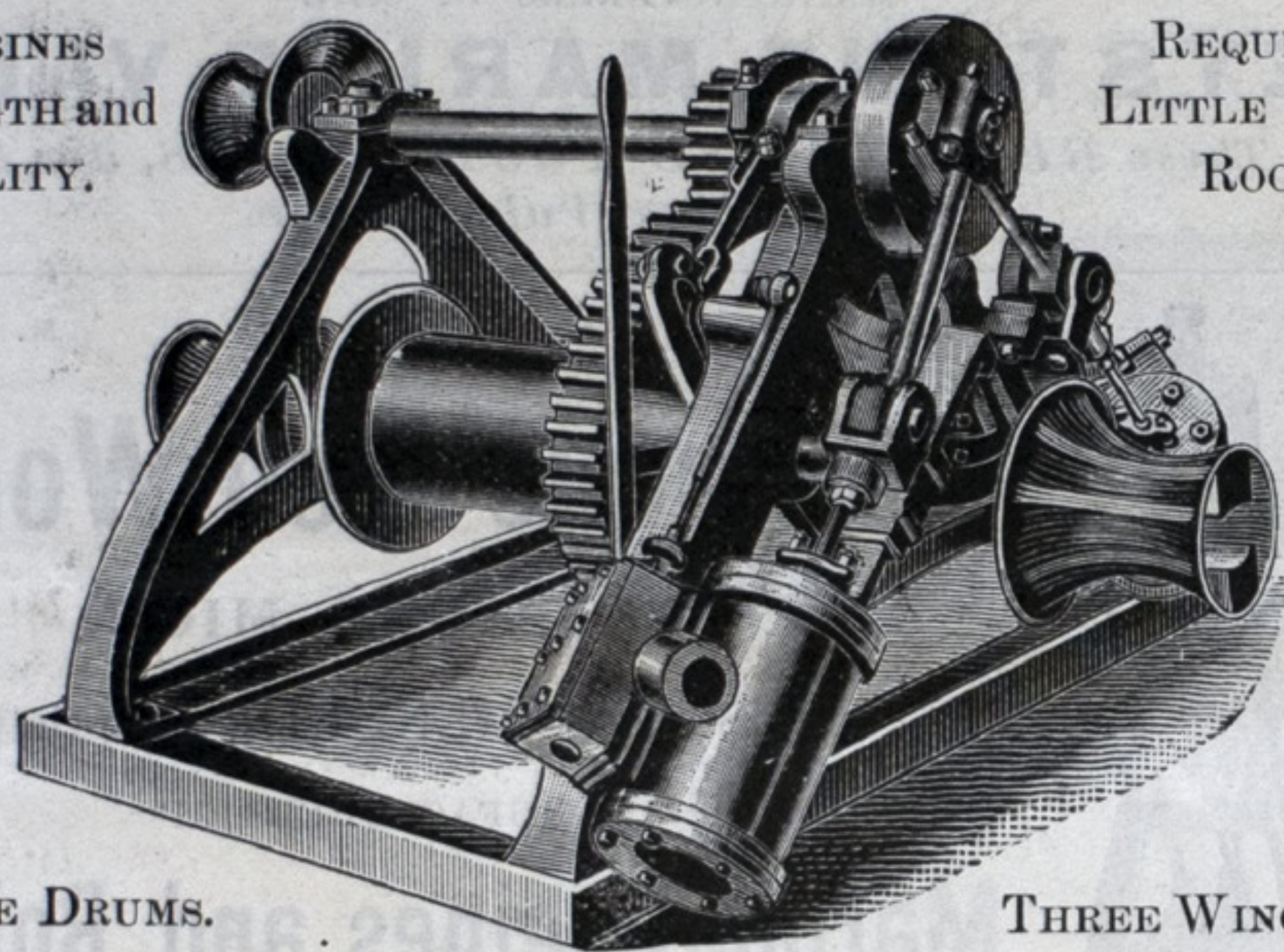
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TO IRON STEAMSHIP BUILDERS.—Treasury Department, Washington, D.C., August 5, 1891. Sealed proposals for the construction of a steam-propeller, to be named "Calumet," for the U. S. Revenue-Cutter Service, to be stationed at Chicago, Ill., will be received at this Department until 2 o'clock P.M. of Thursday, Sept. 10, 1891. Bids must be in accordance with the instructions accompanying the specifications, and should be addressed to the Secretary of the Treasury, and indorsed on the envelopes "Proposals for a Steam-Propeller for the U. S. Revenue-Cutter Service." Bidders must state the time in which they agree to complete the vessel. Specifications and plans for the work will be furnished to parties desiring to submit bids upon application to the Department. The right is reserved to reject any or all bids, and to waive defects, if deemed for the interest of the Government so to do. A. B. NETTLETON, Acting Secretary.

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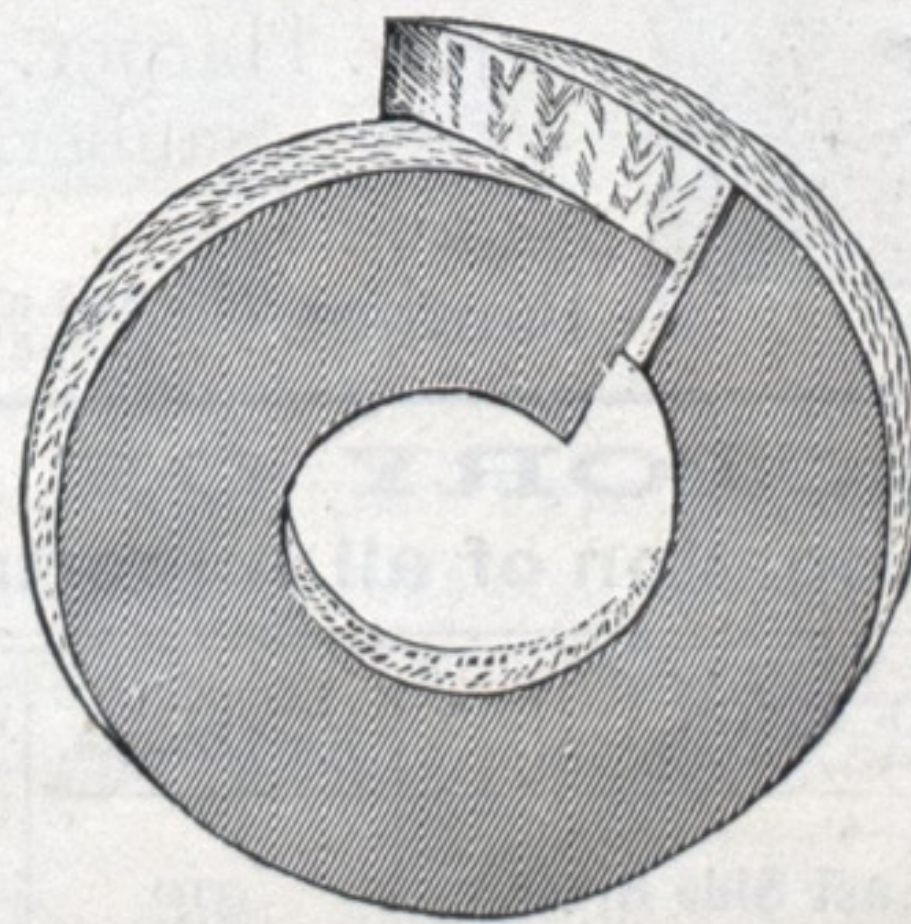
	Arrive.	Depart.
Youngstown Accommodation.....	*7 15 AM	†6 00 AM
New York and Pittsburg Express	†5 15 AM	*8 10 AM
Pittsburg Accommodation.....	*12 30 PM	*11 25 AM
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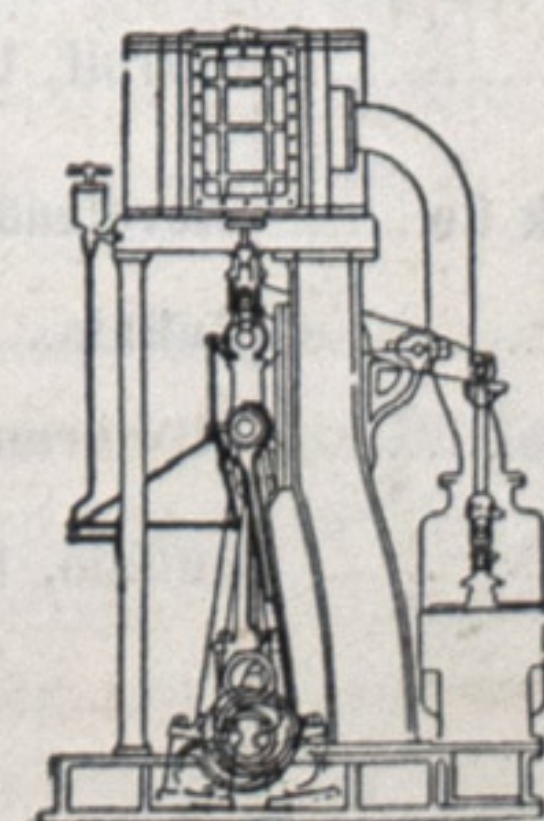
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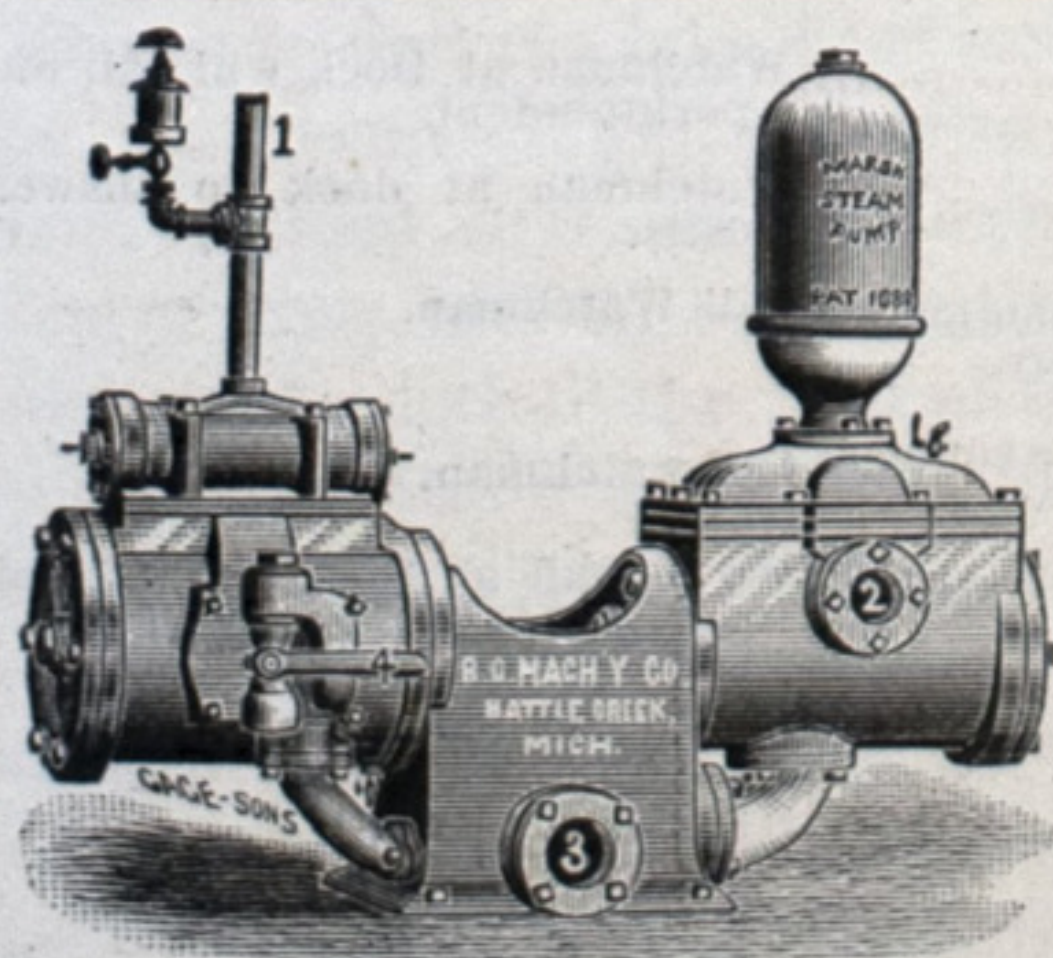
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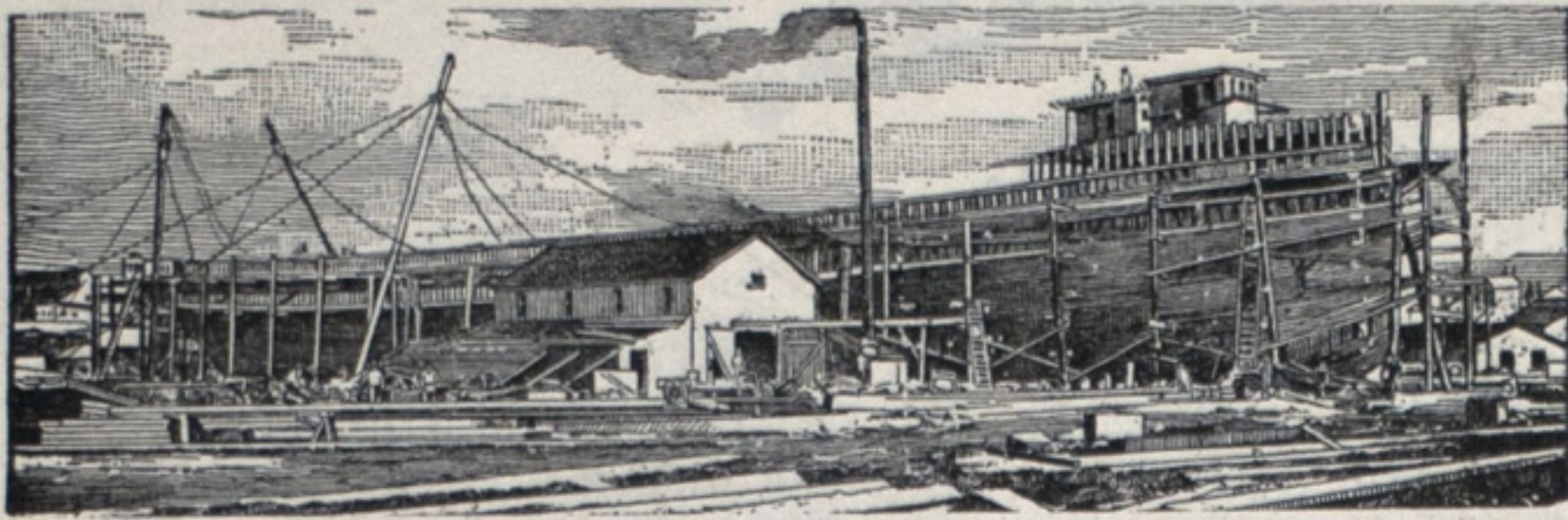
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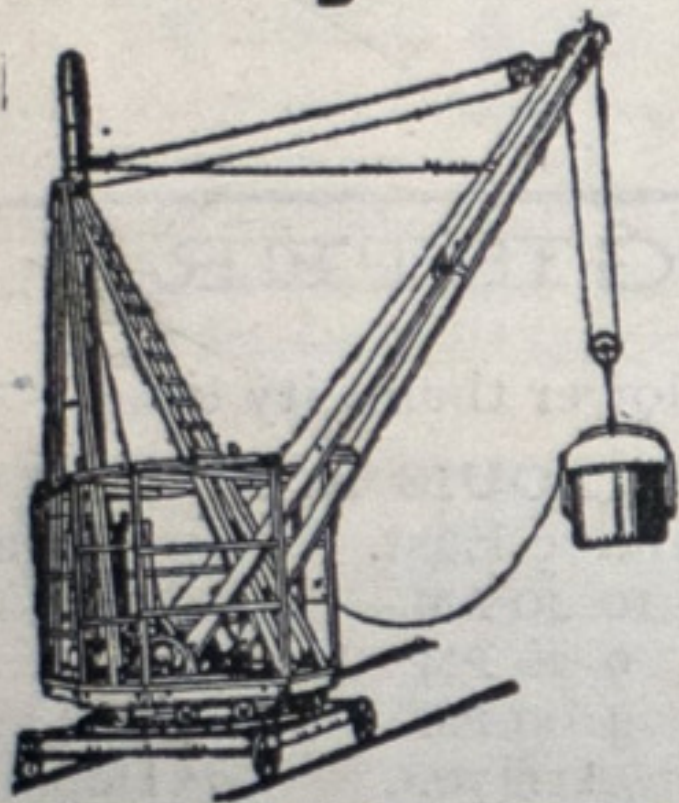
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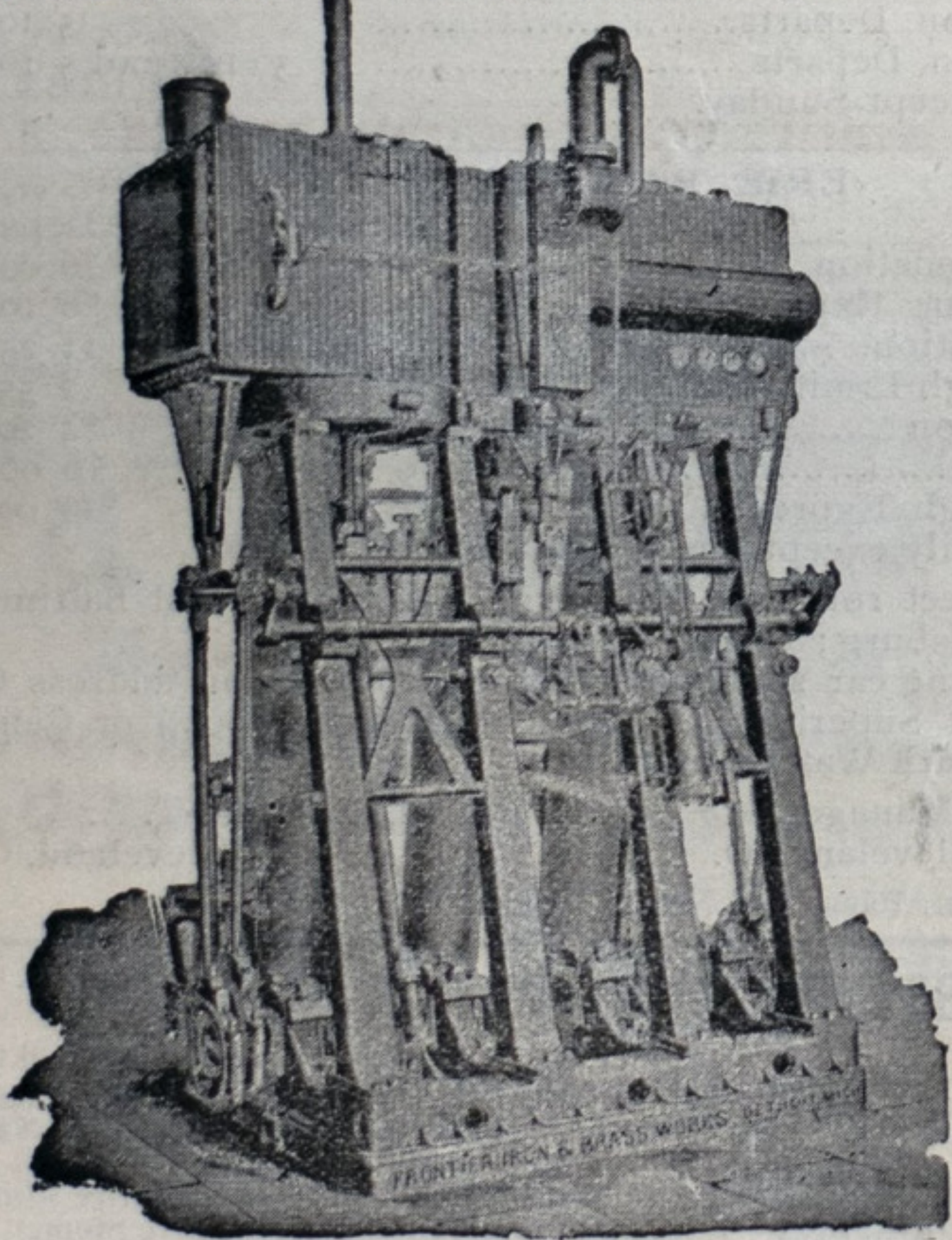
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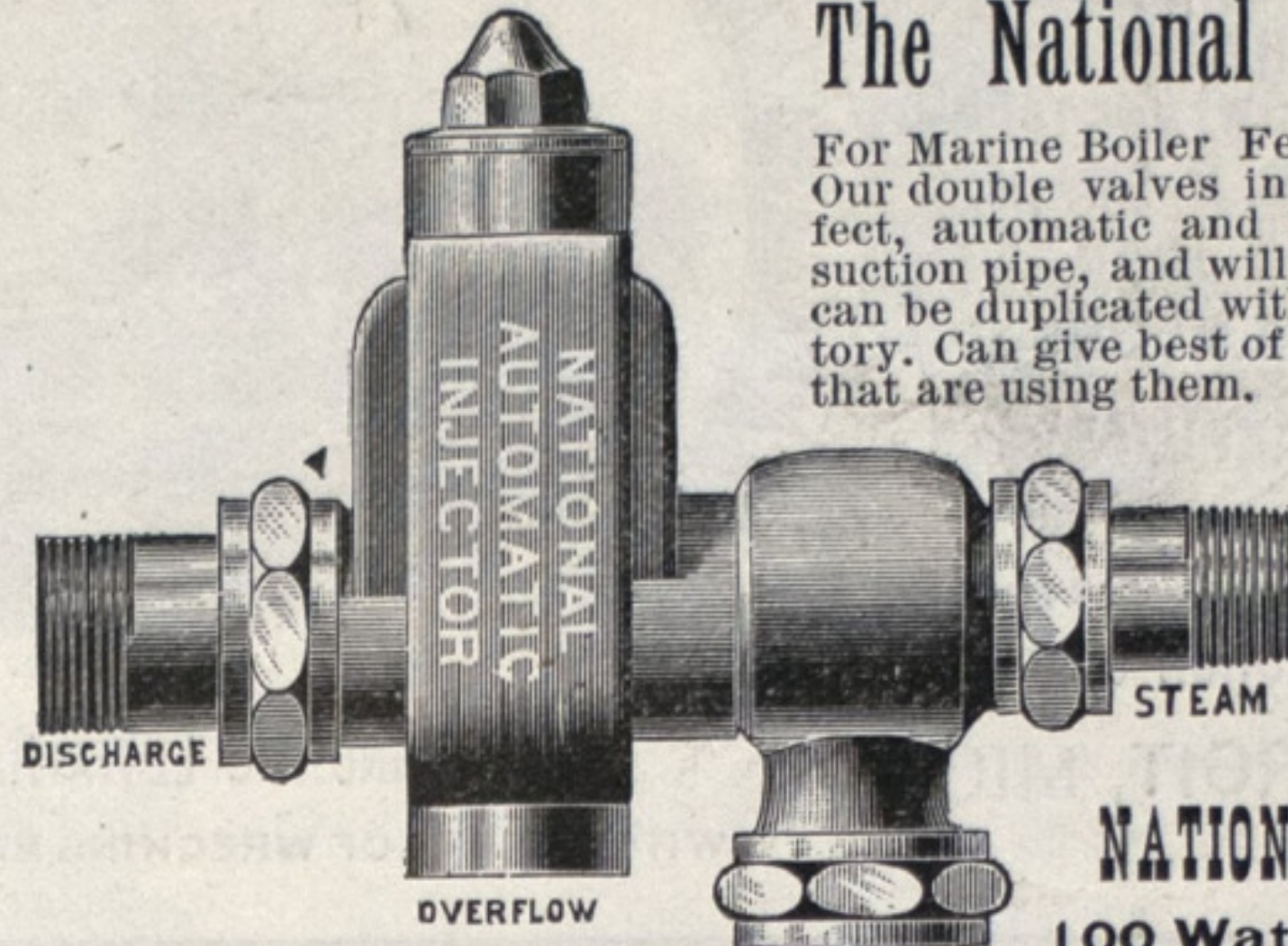
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